

WHAT IS CLAIMED IS:

1. An isolated marine bacterium wherein the marine actinomycete is a member of a new genus comprising a 16S rRNA gene with MAR2 characteristic signature nucleotides:

a uridine at position 304 thereof, a cytidine at position 671 thereof, and a guanidine at position 735.

2. The isolated marine actinomycete of claim 1, wherein the 16S rRNA gene is encoded by a nucleic acid comprising a sequence as set forth in SEQ ID NO:1, 2, 3, 4, 5, 6 or 7.

3. The isolated marine actinomycete of claim 2, wherein the isolated marine actinomycete has a 16S rRNA gene sequence encoded by a nucleotide sequence that is about 80% to about 99% identical to at least one of the nucleotide sequences of SEQ ID NOS:1-7).

4. The isolated marine actinomycete of claim 1, wherein the genus further comprises all family-specific signature nucleotides of the actinomycete family Streptomycetaceae.

5. A method for producing a biomolecule having an activity of interest, comprising:

culturing a marine actinomycete of claim 1 in a salt-containing growth medium to allow production of at least one biomolecule;

collecting the marine actinomycete or the growth medium containing the at least one biomolecule;

extracting the biomolecule from the marine actinomycete or the growth medium; and

testing the extracted biomolecule for the presence of the activity of interest to produce a biomolecule having the activity of interest.

6. The method of claim 5, wherein the activity of interest is pharmaceutical activity selected from antibiotic, antifungal, antiviral and anticancer activities.

7. The method of claim 6, wherein the pharmaceutical activity is an antibiotic activity.

8. The method of claim 6, wherein the pharmaceutical activity is an antifungal activity.

9. The method of claim 6, wherein the pharmaceutical activity is an anti-cancer activity.

10. The method of claim 5, wherein the growth medium comprises seawater.

11. A method for drug discovery comprising:
growing a strain of actinomycete of claim 1 in salt-containing growth medium;
collecting the actinomycete or the growth medium, and
analyzing the actinomycete or growth medium for the presence of a biomolecule with pharmacological activity.

12. The method of claim 11, wherein the analysis comprises an assay for antibacterial activity.

13. The method of claim 12, wherein the analysis comprises an assay for anti-viral activity.

14. The method of claim 12, wherein the analysis comprises an assay for anti-cancer activity.

15. The method of claim 11, wherein the analysis comprises an assay for anti-fungal activity.
16. The method of claim 11, wherein the growth medium comprises seawater.
17. A method for producing a biomolecule, comprising
growing a marine actinomycete of claim 1 in a salt-containing growth medium to produce the biomolecule;
collecting the marine actinomycete or the growth medium containing the biomolecule; and
extracting the biomolecule from the marine actinomycete or the growth medium to produce the biomolecule.
18. The method of claim 17, wherein the growth medium comprises seawater.
19. The method of claim 17, wherein the extracting comprises fractionating the growth medium.
20. The method of claim 19, wherein the extracting comprises use of an absorbent resin.
21. The method of claim 19, wherein the absorbent resin is eluted with an organic solvent.
22. The method of claim 16, wherein the biomolecule is a secondary metabolite of the marine actinomycete.